CLAIMS

What is claimed is:

1. A method comprising creating a raised solder-mask-defined (SMD) pad for a laminate electronic circuit board, wherein the raised SMD pad has a pad face disposed above a surface of a laminate electronic circuit board.

2. A method according to claim 1, wherein creating the raised SMD pad comprises the steps of:

forming a base bump;

covering the base bump with a conductive bump layer, wherein the conductive bump layer covers the base bump and forms an extended edge around a perimeter of the base bump; and

layering a surrounding material over the extended edge of the conductive bump layer.

3. A method according to claim 2, wherein forming the base bump further comprises creating an area of a conductive metal.

4. A method according to claim 2, wherein forming the base bump further comprises exposing an area of an organic material.

5. A method according to claim 4, wherein exposing the area of the organic material further comprises exposing an area of a material selected from a group comprising a solder mask material or a built-up dielectric material.

6. A method according to claim 4, wherein exposing the area of the organic material comprises:

dispensing the organic material over an insulating layer on the surface of the substrate; and

removing a portion of the organic material.

7. A method according to claim 2, wherein covering the base bump with a conductive bump layer further comprises covering the base bump with a material selected from a group consisting of copper, aluminum, gold, silver and nickel.

8. A method according to claim 2, wherein layering the surrounding material over the extended edge of the conductive bump layer further comprises the steps of:

applying the surrounding material over the conductive bump layer; and

removing a portion of the surrounding material to expose the pad face and at least a portion of the sides of the conductive bump layer.

9. A method according to claim 8, wherein applying the surrounding material over the conductive bump layer further comprises applying a solder mask material over the conductive bump layer.

10. A method according to claim 8, wherein removing a portion of the surrounding material further comprises subjecting the surrounding material to a photolithography process.

11. A method according to claim 8, wherein removing a portion of the surrounding material comprises subjecting the surrounding material to a laser-drill process.

12. A raised solder-mask-defined (SMD) solder ball pad comprising:

a base bump;

a conductive bump layer, disposed over the base bump, wherein the conductive bump layer further comprises a pad face, a pad side and an extended edge; and

a surrounding layer, wherein the surrounding layer is disposed over the extended edge and surrounding the sides of the conductive bump layer, and wherein the pad face extends above a surface of the solder mask.

13. The raised SMD solder ball pad of claim 12, wherein the base bump comprises an organic material.

14. The raised SMD solder ball pad of claim 13, wherein the base bump comprises a material selected from a group comprising a solder mask material or a built-up dielectric material.

15. The raised SMD solder ball pad of claim 12, wherein the base bump comprises a conductive material.

16. The raised SMD solder ball pad of claim 15, wherein the base bump comprises copper.

17. The raised SMD solder ball pad of claim 12, wherein the conductive bump layer is a material selected from a group consisting of copper, aluminum, gold, silver and nickel.

18. The raised SMD solder ball pad of claim 12, wherein the surrounding layer comprises a solder mask material.

19. A package solder ball pad for a ball-grid-array (BGA) semiconductor package substrate, the package solder ball pad created by a method comprising:

forming a base bump on the package substrate, wherein the base bump protrudes above a surface of the package substrate;

applying a conductive bump layer over the base bump;

applying a surrounding layer over the bump; and

modifying the surrounding layer to expose a portion of the conductive bump layer, wherein the exposed portion of the conductive bump layer protrudes above a surface of the surrounding layer.

20. The raised SMD solder ball pad of claim 19, wherein forming a base bump on the package substrate further comprises applying a solder mask material to the surface of the package substrate.

21. The raised SMD solder ball pad of claim 20, wherein forming a base bump on the package substrate further comprises defining the base bump by removing a portion of the solder mask material.

22. The raised SMD solder ball pad of claim 19, wherein applying a conductive bump layer over the base bump further comprises applying a layer of copper over the base bump.

23. The raised SMD solder ball pad of claim 19, wherein modifying the surrounding layer to expose a portion of the conductive bump layer further comprises patterning a solder mask material.

24. The raised SMD solder ball pad of claim 23, wherein patterning the solder mask material to expose a portion of the conductive bump layer further comprises subjecting the solder mask material to a photolithography process.

25. The raised SMD solder ball pad of claim 24, wherein patterning the solder mask material to expose a portion of the conductive bump layer further comprises subjecting the solder mask to a laser drilling process.